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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,831	03/05/2002	Seung-Joon Yang	1293.1312	4781
21171	7590	12/14/2004	EXAMINER	
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			BAYAT, ALI	
			ART UNIT	PAPER NUMBER
			2625	

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/087,831

**Applicant(s)**

YANG ET AL.

**Examiner**

Ali Bayat

**Art Unit**

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liou et al. (US 5,835,163) in view of Kim (US 6,078,686).

In regard to claim 1, Liou provides for a model parameter estimator estimating parameters from the image using a Gaussian model (col.9 lines 60-65); and error function storing unit storing function values based on a Gaussian distribution (col.9 lines 60-65, note frame difference signals that corresponds to error function storing unit); Liou does not provide expressly for a CDF calculator calculating a CDF using one of the error function values from the error function storing unit and the estimated parameters; and a histogram equalizer performing histogram equalization using the CDF. Kim provides for a CDF calculator calculating a CDF using one of the error function values from the error function storing unit and the estimated parameters (Fig.4 element 308, col.8 lines 62-67); And a histogram equalizer performing histogram equalization using the CDF (Fig.4 element 312, col.9 line 19-28). The prior art of Liou et al. and Kim are combinable because they are from the same field of endeavor (detecting a cut in video and image quality enhancement). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Kim with the system and method of Liou et al. because the invention of Kim relates to image quality

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enhancement, and more particularly, to image quality enhancing circuit having functions such as noise reduction, contrast enhancement based on histogram equalization (col.1 lines 5-9 of Kim).

With regard to claims 2,9,12 and 18, Liou provides for a model parameter modifier modifying the estimated parameters and outputting modified parameters to the CDF calculator (col.9 lines 60-65).

As to claim 3, Liou provides for an apparatus, wherein the parameters by the model parameter estimator comprise a mean and a variance (col.9 lines 60-65).

In regard to claims 4 and 16, Liou provides for an apparatus, wherein the CDF calculator calculates the CDF using an error function value from the Gaussian distribution comprising a zero mean and a unit variance (col.9 lines 60-65).

As to claims 5,8 and 13, provides for an apparatus, wherein the error function-storing unit comprises a look-up table (col.21, note table 1).

With regard to claims 6 and 17, Liou provides for an apparatus, wherein the error function storing unit stores the error function values with a zero mean and a unit variance col.9 lines 60-65).

As to claim 7. See rejection of claim 1 above. It recites similar limitations as claim 7. Except for a model parameter estimator estimating parameters comprising mean and variance, from the image using a Gaussian model (col.9 lines 60-65); and error function storing unit storing function values based on a Gaussian distribution with a zero mean and a unit variance (col.9 lines 60-65, note frame difference signals that corresponds to error function storing unit). Hence it is similarly analyzed and rejected.

With regard to claims 10 and 14, Liou provides for an apparatus, wherein the model parameter modifier modifies the mean to adjust brightness of the image and modifies the variance to adjust contrast of the image ( col.3 lines 19-21).

In regard to claim 11, Liou provides for a model parameter estimator estimating parameters comprising mean and variance, from the image using a Gaussian model (col.9 lines 60-65); and error function storing unit storing function values based on a Gaussian distribution (col.9 lines 60-65, note frame difference signals that corresponds to error function storing unit). Liou does not provide for CDF calculators calculating CDF using the parameters from the model parameter estimator and the error function values from the error function storing unit; and an image segmentation unit segmenting the image into subimages having a Gaussian distribution; and histogram equalizers performing histogram equalization on the subimages provided from the image segmentation unit using the CDFs calculated by the CDF calculators. Kim provides for CDF calculators calculating CDF using the parameters from the model parameter estimator and the error function values from the error function storing unit (Fig.4 element 308, col.8 lines 62-670; and an image segmentation unit segmenting the image into subimages having a Gaussian distribution (Fig. 4 element 306); and histogram equalizers performing histogram equalization on the subimages provided from the image segmentation unit using the CDFs calculated by the CDF calculators (Fig.4 element 312, col.9 lines 19-280. The prior art of Liou et al. and Kim are combinable because they are from the same field of endeavor (detecting a cut in video and image quality enhancement). At the time of the invention, it would have been obvious to a

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person of ordinary skill in the art to incorporate the teaching of Kim with the system and method of Liou et al. because the invention of Kim relates to image quality enhancement, and more particularly, to image quality enhancing circuit having functions such as noise reduction, contrast enhancement based on histogram equalization (col.1 lines 5-9 of Kim).

With regard to claim 15. See rejection of claim 1 above. It recites similar limitation as claim 15. Hence it is similarly analyzed and rejected.

As to claim 19. See rejection of claim 11 above. It recites similar limitation as claim 19. Hence it is similarly analyzed and rejected.

In regard to claim 20. See rejection of claim 7 above. It recites similar limitations as claim 20. Hence it is similarly analyzed and rejected.

#### **Contact Information**

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ali Bayat whose telephone number is 703-306-5915. The examiner can normally be reached on M-Thur 9:00-7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 703-3085246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ali Bayat *AB*  
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12/12/04

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